

**P063** Environmental contaminants, polychlorinated biphenyls (PCBs), cause  $\beta$ -cell death: an effect potentiated by fatty acids

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Exposure to polychlorinated biphenyls (PCB) -environmental contaminants -has been linked to incidence of Type II diabetes. This study determined the in vitro effect of PCB 126 on a  $\beta$ -cell line. BRIN-BD11 cells were exposed to PCB 126 (1-20 $\mu$ M) either alone or in combination with palmitic acid (30 $\mu$ M) for 24 or 48h. Cell viability/death was measured using the MTT assay and propidium iodide/Hoechst staining; glucose stimulated insulin secretion was also measured. Exposure to PCB 126 increased insulin secretion. However, PCB 126 reduced BRIN-BD11 cell viability to 95% $\pm$ 4, 81% $\pm$ 6, 68% $\pm$ 4 and 52% $\pm$ 5 ( $p < 0.05$  vs. untreated cells) for 1,3,10 and 20 $\mu$ M respectively at 48h. PCB 126 increased BRIN-BD11 cell necrosis dose and time dependently but had no effect on apoptosis. Exposure to PCB 126 at 1 or 3 $\mu$ M or palmitic acid at 30 $\mu$ M alone for 24h had minimal effects on BRIN-BD11 cell viability (104% $\pm$ 3, 96% $\pm$ 6 and 87% $\pm$ 3). However, combining 30 $\mu$ M palmitic acid with 1  $\mu$ M or 3 $\mu$ M PCB 126 reduced cell viability to 71% $\pm$ 4 and 58% $\pm$ 5 ( $p < 0.01$  vs. PCB 126 or palmitic acid alone). Exposure of  $\beta$ -cells to PCB 126 increased cell death, an effect strongly enhanced by palmitic acid. PCB 126 mediated- $\beta$ -cell killing may explain the association between PCB exposure and Type II diabetes.